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Mr. Jerry Kurtz  
Growth Management Division  
Stormwater and Environmental Planning Section  
2800 North Horseshoe Drive  
Naples, FL 34104

May 10, 2013

cc: Ananta Nath; SFWMD  
Jennifer Nelson; FDEP

RE: Response to Comments  
North Golden Gate Estates Flowway Restoration Project, Draft Final Report

Dear Mr. Kurtz,

ATKINS has reviewed the comments received on the Draft Final Report submitted for the North Golden Gates Estates Flowway Restoration Project. This letter documents our response to the comments.

#### **Review Comments from Max Guerra; SFWMD - BCB**

**Comment 1.** Details about existing quarry depth, geology and chemistry of the quarry water are highly important and should be considered.

**Response:** In general, we agree with the comment and these issues should be considered if the project moves forward. However, our scope of work did not include tasks to evaluate the geology and chemistry of the quarry water. An alternative design, that bypassed the quarry, was considered in the Collier County Watershed Management Plan. That plan included a single pump in the Golden Gate Main Canal.

**Comment 2.** Interaction between canal water and quarry water are unpredictable since water quality due to mining activity may be changed and toxic metals may be released by biochemical reactions within the exposed aquifer materials.

**Response:** Same as comment 1.

**Comment 3.** Assuming that quarry is deep thermally stratification may occur with oxygen reduction in the bottom

**Response:** Same as comment 1.

**Comment 4.** Quarry rehabilitation may be necessary before pumping quarry water into spreader system

**Response:** Same as comment 1.

**Comment 5.** Hydraulics of the proposed diversion system is unclear as how will canal water be entering the lake by gravity flow

**Response:** It is assumed that water levels in the canal will rise faster than water levels in the quarry during storm events and would create a head differential sufficient to allow gravity flow to occur into the quarry.

**Comment 6.** Because aquifers in the quarry are exposed and fractured groundwater will always be recharging the lake to compensate the volume that has been pumped. This will be affecting the functionality of the diversion system

**Response:** We will modify the text in the report. The simulated pump operations are dependent on rate of flow through the diversion structure. The purpose is to pump a volume of water from the quarry that is equal to or greater than what is entering through the diversion structure. It is assumed that this would maintain the head differential between the canal and the quarry and minimize the impacts of groundwater inflows. The diversion structure gates will close as the head differential is reduced to prevent backflow from the quarry to the canal.

**Comment 7.** In situ investigation and test may be needed in order to determine seepage and water losses to groundwater

**Response:** Same as comment 1.

**Comment 8.** Section A-A in Sheet C-18 showing Box Culvert connecting canal with mine pit need to be revised. Box culvert should not be too long because of high friction in the pipe reducing conveyance, but also increasing construction and maintenance costs

**Response:** The referenced section will be corrected. The culvert is only 40 feet long and was scaled incorrectly in the drawing.

#### **Review Comments by Ananta Nath: SFWMD - BCB**

**Comment 9.** The increase in the volume flow in Miller Canal as a result of implementation of scenario1 is insignificant, and does not appear to adversely impact the conveyance capacity of the canal nor of the roadside swales draining to the canal. Although the pumps of the Picayune Strand Restoration Project (PSRP) will have the capacity to convey up to 100-year peak flows, the report should indicate that the enhanced flowways will neither impact the targeted water delivery to the project and functioning of the pumps, nor the goals of PSRP adversely.

**Response:** The report will be modified to include the recommended statement.

**Comment 10.** The placement of 86 additional culverts as proposed should be subject to no adverse impact on the private properties of NGGE. Many of the culverts may have to be fitted with operable flap gates to minimize impact on downstream private property. The linkage of the

restored flowways will need to be incorporated to the water management features of the future NGGE roads like Vanderbilt Beach Road Ext, Randall Blvd improvements and Wilson Blvd Ext.

**Response:** The report will be modified to address this comment.

**Comment 11.** The project features of Scenario 4 need to consider evaluation of the effectiveness of the existing plugs, and/or placement of additional plugs on the north ditch of I-75 to redirect flows to the I-75 culverts from North Belle Meade to South Belle Meade.

**Response:** The report will be modified to address this comment.

**Comment 12.** I found some of the cost estimates of the recommended elements too high from my cursory review. For instance, 26% of the direct costs of scenario 2 culverts for dewatering (\$172,000 for dewatering/ total direct cost \$671,000) may not be justifiable.

**Response:** The cost estimate will be reviewed and language regarding the assumptions will be added to the report.

**Comment 13.** The project features did very little analysis of the nano-wetland elements conceptualized as a part of the NGGE Regional Off-site Mitigation Area (ROMA) (CCMP Nonstructural Initiative 9). Some recommendation for treatment of stormwater in those lands would be helpful.

**Response:** The report will be modified to address this comment.

#### **Comments from Mike Duever:**

**Comment 14.** What about pumping into the North Belle Meade swale throughout the year whenever water levels in the GG Canal are high enough, not just during the wet season?

**Response:** The simulated alternative relies on gravity flow to divert water from the canal and does not provide an ability to divert flows during the dry season unless the water level in the canal is extremely high. An alternative design that bypassed the quarry, considered in the Collier County Watershed Management Plan, included a pump in the GG Canal that would provide the flexibility to divert water during the dry season. In addition, the Henderson Creek Diversion project under consideration by the Big Cypress Basin is designed to provide dry season flows from the Golden Gate Canal directly to Henderson Creek.

**Comment 15.** The design of the diversion structure appears to be meant to reduce periodic peak flows above about 400 cfs. What about reducing the canal flows well below 400 cfs as much of the time as possible? I assume that Naples Bay rarely had natural inflows of anywhere near 400 cfs. The additional reduction would benefit Naples Bay and the North Belle Meade wetlands.

**Response:** The gravity flow diversion structure contemplated in the analysis does not function well unless water levels in the canal are higher than water levels in the quarry. In most instances the flow through the diversion structure is less than 400 cfs and pump operates accordingly. If the water level is less than that in the quarry, the diversion structure will not open regardless of the flow in the canal.

**Comment 16.** I'm not certain what the differences in costs are between the 400 and 800 cfs pump and their associated infrastructure, but if they aren't too great, the gain in flow reduction with the 800 cfs pumps seems worthwhile.

**Response:** In general, we agree with the comment; however, the risk of additional wet season discharge to Rookery Bay would have to be considered as part of the decision making process. Projects such as the South I-75 spreader swale could be used to mitigate the addition flows.

**Comment 17.** Is there a way to force more water to move across I-75 into South Belle Meade and reduce the flows along I-75 to Miller Canal and the CR951 ditch, if not as part of this project, maybe at some later date?

**Response:** The short answer is yes. Implementing the South I-75 spreader swale described in the Collier County Watershed Management Plan in conjunction with raising the level of the of the weir structures in the north and south I-75 canals would allow more water to migrate south. The use of a pump station as part of the South I-75 spreader swale project would create a larger head differential and increase flows under I-75. This relates to Comment 11 from Ananta Nath and will be discussed in the report.

**Comment 18.** I thought we were trying to get more water to the CR 951 ditch to increase to the water supply for Marco Island?

**Response:** The increased demand occurs primarily during the dry season and the BCB proposed Henderson Creek Diversion project is designed to address this need.

**Comment 19.** On page 21, additional flows from this project through the Picayune Miller Pump Station are discussed and it stated that the additional flows would still be within the station's design pump capacity of 1250 cfs. Does that take into consideration that the 1250 cfs capacity is designed to deal with the 100-year event?

**Response:** This issue relates to Comment 9 from Ananta Nath.

**Comment 20.** Is increasing groundwater in the vicinity of the County well fields just going to mean that the County will be allowed to increase pumping, which could negate and maybe even aggravate existing hydrologic problems in the area?

**Response:** This evaluation assumes that the pumping schedule did not change during the simulation period. It does not consider changes in groundwater withdrawals that may be considered in the future.

**Comment 21.** Given all of the problems we had with making sure the PSRP didn't raise water levels even a fraction of an inch above current conditions during the 100-year flood event, is there a problem with raising water levels in some areas in this project?

**Response:** The purpose of the project is to raise water levels in some areas of the Golden Gate Estates to improve wetland habitat and reduce discharges to the canal network. As stated in Comment 10 from Ananta Nath, those improvements must be balanced by a requirement that the project cause no adverse effects to existing homeowners in the area.

**Comment 22.** How much does Naples Bay depend on flushing associated with GG Canal outflows to maintain WQ in the Bay; or do these outflows degrade WQ in Naples Bay?

**Response:** This question is beyond the scope of this project. The question was addressed in detail in the Collier County Watershed Management Plan.

**Comment 23.** On page 9 and 11 there is mention of average percent reduction in wet season outflows associated with the 800 and 400 cfs pumps. Then there is mention of monthly percent reductions in outflows that are calculated by dividing the wet season outflows by 4. I'd drop the monthly percent numbers because I don't think they're correct. If you're going to talk about monthly reductions, you should also divide the wet season canal flows by 4, which would give you similar monthly diversion percentages to the total wet season diversion percentages. The incorrect monthly percentages indicate much lower effectiveness of the project than do the correct percentages.

**Response:** The language in the report will be modified to address this comment.

**Comment 24.** I like the way the report developed, resulting in Scenario 4. It seems like it could also form the basis for further improvements in the area.

**Response:** This comment is acknowledged.

If you have additional questions, please call me at (813) 281-8384.

Best regards,

Peter deGolian  
Project Manager, Atkins